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# CLAIMS

1. A hydrogen storage material which is an AB<sub>5</sub> type hydrogen storage alloy having a CaCu<sub>5</sub> type crystal structure represented by general formula:



5 wherein Mm is a misch metal,  $4.1 < a \leq 4.3$ ,  $0.4 < b \leq 0.6$ ,  $0.2 \leq c \leq 0.4$ ,  $0.1 \leq d \leq 0.4$ , and  $5.2 \leq a+b+c+d \leq 5.45$ ,

characterized in that the lattice length on the c-axis is 406.2 pm or more.

2. A hydrogen storage material which is an AB<sub>5</sub> type hydrogen storage alloy having a CaCu<sub>5</sub> type crystal structure represented by general formula:



wherein Mm is a misch metal, X is Cu and/or Fe,  $4.1 < a \leq 4.3$ ,  $0.4 < b \leq 0.6$ ,  $0.2 \leq c \leq 0.4$ ,  $0.1 \leq d \leq 0.4$ ,  $0 < e \leq 0.1$ , and  $5.2 \leq a+b+c+d+e \leq 5.45$ ,

characterized in that the lattice length on the c-axis is 406.2 pm or more.

3. The hydrogen storage material according to claim 1 or 2, wherein said lattice length on the c-axis is from 406.6 to 407.1 pm.

4. The hydrogen storage material according to claim 1 or 2, wherein  $(a+b+c+d)$  or  $(a+b+c+d+e)$  is 5.2 or greater and smaller than 5.3, and said lattice length on the c-axis is 406.2 or greater and smaller than 406.8 pm.

5. The hydrogen storage material according to claim 1 or 2, wherein  $(a+b+c+d)$  or  $(a+b+c+d+e)$  is from 5.3 to 5.45, and said lattice length on the c-axis is from 406.8 to 407.3 pm.

6. A process for producing a hydrogen storage material comprising heat-melting raw materials of a hydrogen storage material, casting the melt, and heat treating the cast product in an inert gas atmosphere to produce an AB<sub>5</sub> type hydrogen storage material having a CaCu<sub>5</sub> type crystal structure represented by the following general formulae, characterized in that the casting temperature is 1300 to 1550°C, the pouring temperature

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is 1200 to 1450°C, and conditions of said heat treating are 1040 to 1080°C and 1 to 6 hours.

General formula:



5            wherein Mm is a misch metal,  $4.1 < a \leq 4.3$ ,  $0.4 < b \leq 0.6$ ,  $0.2 \leq c \leq 0.4$ ,  $0.1 \leq d \leq 0.4$ , and  $5.2 \leq a+b+c+d \leq 5.45$ .

7.        A process for producing a hydrogen storage material comprising heat-melting raw materials of a hydrogen storage material, casting the melt, and heat treating the cast product in an inert gas atmosphere to produce an AB<sub>5</sub> type hydrogen storage material  
10        having a CaCu<sub>5</sub> type crystal structure represented by the following general formulae, characterized in that the casting temperature is 1300 to 1550°C, the pouring temperature is 1200 to 1450°C, and conditions of said heat treating are 1040 to 1080°C and 1 to 6 hours.

General formula:



          wherein Mm is a misch metal, X is Cu and/or Fe,  $4.1 < a \leq 4.3$ ,  $0.4 < b \leq 0.6$ ,  $0.2 \leq c \leq 0.4$ ,  $0.1 \leq d \leq 0.4$ ,  $0 < e \leq 0.1$ , and  $5.2 \leq a+b+c+d+e \leq 5.45$ .

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